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Yossi Kaplan

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EXAMINER

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ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/523,149	<b>Applicant(s)</b> KAPLAN ET AL.	
	<b>Examiner</b> OLUMIDE T. AJIBADE AKONAI	<b>Art Unit</b> 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 41-54 and 56-67 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 63 is/are allowed.
- 6) ☒ Claim(s) 41, 47-54, 56-62, 64, 66 and 67 is/are rejected.
- 7) ☒ Claim(s) 65 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 51, 54, 58, 59 and 67 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 51 recites the limitation "the call" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 54 recites the limitation "the calls" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 58 recites the limitation "the location in time and accuracy level" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 59 recites the limitation "the location in time and accuracy level" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claim 67 recites the limitation "the operational stage" in line 4. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 41, 48, 49, 52, 53, 56, 64 and 66 are rejected under 35 U.S.C. 102(a) as being anticipated by **Bahl et al 6,385,454 (hereinafter Bahl)**.

Regarding **claim 41**, Bahl discloses a method for correlating a vehicle with the road on which it travels based on cellular communication, the method comprising the steps of: gathering a sequence of events from the cellular network (UMP, see col. 8, lines 57-67, col. 11, lines 60-65), together with the road location of the mobile unit at the timing of these events (occurrence times, see col. 8, lines 39-47, col. 11, lines 60-65) as a location reference and creating a learnt database (UMPs are stored in a user profile memory 33, see fig. 2, col. 8, lines 33-35); and conducting analysis of new data (UAP, see col. 8, lines 25-30), generated from communication with another mobile unit on a new drive that does not contain location reference in conjunction with the learnt database to match a sequence of reports to a specific route (the user's actual path UAP is compared to the user's mobility pattern UMP, see col. 9, lines 25-39); whereas the new data is collected from the base stations or the controllers or main switching systems or communication links between them (determining the UAP by from the received signal strength from a base station to a mobile station, see col. 4, lines 7-14, col. 14, lines 17-26) whereas the data is processed to overcome the problem of similar sequences for neighboring routes (the UAP is compared to the UMP in order to provide the predicted present route of the mobile unit, see col. 8, lines 25-39).

Regarding **claim 48**, as applied to claim 1, Bahl further discloses where as the analysis stage comprises of: matching cell chains from new drives to the learnt database by searching for a chain of J cells that has at least K ( $K \leq J$ ) cells that appear

in the same order, both in a chain from the new drive as well as in a chain from the learnt database, whereas J and K may vary for different route sections (the user's actual path UAP is compared to the user's mobility pattern UMP, see col. 9, lines 25-39); assigning the route of the chain from the learnt database to the new chain that was matched (the UAP is compared to the UMP in order to provide the predicted present route of the mobile unit, see col. 8, lines 25-39).

Regarding **claim 49**, as applied to claim 48, Bahl further discloses where as the analysis stage includes a secondary matching procedure comprising of matching cells before and after the match we have detected in the initial stage by following the raw data chains in the learnt database backward and forward relative to the matched chain and looking for an L out of M ( $L \leq M$ ) cells match where as M is typically smaller than J, where as L and M may vary for different route sections (the user's actual path UAP is compared to the user's mobility pattern UMP, see col. 9, lines 25-39).

Regarding **claim 52**, as applied to claim 41, Bahl further discloses where as the analysis of new drives is conducted based only on cell ID data (see col. 8, lines 17-39).

Regarding **claim 53**, Bahl discloses a method for correlating a vehicle with the road on which it travels based on cellular communication, the method comprising the steps of: gathering a sequence of events from the cellular network (UMP, see col. 8, lines 57-67, col. 11, lines 60-65), together with the road location of the mobile unit at the timing of these events (occurrence times, see col. 8, lines 39-47, col. 11, lines 60-65) as a location reference and creating a learnt database (UMPs are stored in a user profile memory 33, see fig. 2, col. 8, lines 33-35); and conducting analysis of new data (UAP,

see col. 8, lines 25-30), generated from communication with another mobile unit on a new drive that does not contain location reference in conjunction with the learnt database to match a sequence of reports to a specific route (the user's actual path UAP is compared to the user's mobility pattern UMP, see col. 9, lines 25-39); whereas the data is processed to overcome the problem of similar sequences for neighboring routes (the UAP is compared to the UMP in order to provide the predicted present route of the mobile unit, see col. 8, lines 25-39); and the analysis is conducted based on extraction of handover related messages, only from communication links between the switch and the base station controllers in a cellular network (determining the UAP by from the received signal strength from a base station to a mobile station, and delivery of global prediction message determined by the UAP and UMP to the BTS, BSC and MSC, see col. 4, lines 7-14, col. 8, lines 4-16, col. 14, lines 17-26).

Regarding **claim 56**, as applied to claim 41, Bahl further discloses where as the analysis stage comprises of: matching cell chains from new drives to chains in the learnt database the user's actual path UAP is compared to the user's mobility pattern UMP, see col. 9, lines 25-39), filter out new chains that were matched with chains in the learnt database which represent more than one route section the UAP is compared to the UMP in order to provide the predicted present route of the mobile unit, see col. 8, lines 25-39).

Regarding **claim 64**, as applied to claim 41, Bahl further discloses whereas the method is used for areas where at least 2 roads are covered, at least partially, by the

same 2 or more cells (inherent, since the storing of multiple UMPs in the user profile memory indicates that multiple routes/roads are covered, see col. 8, lines 40-56).

Regarding **claim 66**, as applied to claim 41, Bahl further discloses where as further analysis is conducted to continuously update the learnt database, the analysis comprising the steps of: estimating the location of handovers within matched sequences that do not appear in the database (see col. 8, lines 40-60); and adding new matched sequences to the learnt database (when UAP is different from stored UMP by more than a threshold amount of cells, the UAP is stored in a user profile memory 33 as a new UMP, see col. 8, lines 57-60).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 47, 50 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bahl et al 6,385,454 (hereinafter Bahl)** in view of **Rudrapatna et al 6,052,598 (hereinafter Rudrapatna)**.

Regarding **claim 47**, as applied to claim 41, Bahl, discloses the claimed invention except where as in the learning phase the accuracy level of a handover is calculated in one or a combination of the following ways: using signal strength measurements to detect sharp decays in signal strength resulting in a handover and thus determine handovers accuracy level; measuring the location spread of handovers between the same cells for different trips over the same route to determine handover accuracy level and average location.

In the same field of endeavor, Rudrapatna discloses using signal strength measurements to detect sharp decays in signal strength resulting in a handover and thus determine handovers accuracy level (see figs. 1-3, col. 3, lines 21-51); measuring the location spread of handovers between the same cells for different trips over the same route to determine handover accuracy level and average location.



It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Rudrapatna into the system of Bahl for the purpose of determining the location of a mobile phone in a cell.

Regarding **claim 50** as applied to claim 41, Bahl further discloses where as an analysis is conducted to detect the vehicle location in specific points along the route comprises of: extracting matching handovers (cell pairs) information of a new chain (location, timing, accuracy) from chains in the learnt database that were matched with it (the UAP is compared to the UMP in order to provide the predicted present route of the mobile unit, see col. 8, lines 25-39). Rudrapatna further discloses calculating location and accuracy of handovers in the new chain according to handovers from the extracted chains from the learnt database that relate to the same route section and contain the same cell pairs (see figs. 1-3, col. 3, lines 21-51).

Regarding **claim 57** as applied to claim 41, Bahl further discloses where as an analysis is conducted to detect the vehicle location in specific points along the route comprises of: extracting matching handovers (cell pairs) information of a new chain (location, timing, accuracy) from chains in the learnt database that were matched with it (the UAP is compared to the UMP in order to provide the predicted present route of the mobile unit, see col. 8, lines 25-39). Rudrapatna, however, further discloses calculating location and accuracy of handovers in the new chain according to handovers from the extracted chains from the learnt database that relate to the same route section and contain the same cell pairs (see figs. 1-3, col. 3, lines 21-51).

6. Claims 60-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bahl et al 6,385,454 (hereinafter Bahl)** in view of **Toshimitsu et al 20060072501 (hereinafter Toshimitsu)**.

Regarding **claim 60**, as applied to claim 41, Bahl discloses the claimed limitation except where as analysis is conducted to detect traffic incidents, the analysis comprising the steps of: collecting handover's time density information for each route section; alerting on probable incident whenever density of new chains decreases rapidly.

Toshimitsu however discloses where as analysis is conducted to detect traffic incidents, the analysis comprising the steps of: collecting handover's time density information for each route section; alerting on probable incident whenever density of new chains decreases rapidly (using handover frequency to determine presence of traffic jam on a road, se p.11, [0127]-[0128]). It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Bahl, by determining the frequency of handoff on a road as taught by Toshimitsu for the benefit of detecting the speed of a vehicle or traffic condition of the road.

Regarding **claim 61**, as applied to claim 41 Bahl discloses the claimed limitation. Toshimitsu further discloses where as analysis is conducted to detect clearance. This analysis comprises of: collecting handover's time density information for each route section; and notifying on incident clearance whenever, after an incident, the density of news increases significantly (using handover frequency to determine presence of traffic jam on a road, se p.11, [0127]-[0128]).

Regarding **claim 62**, as applied to claim 41, Bahl discloses the claimed limitation. Toshimitsu further discloses wherein analysis is conducted to detect traffic speed, the analysis comprising the step of: a calibration stage in which traffic speed of a route section is correlated with the rate of handovers for this route section on the same time; the handovers rate is measured continuously and by comparing to the rate of handovers in the calibration stage the speed for the route section is extracted (using handover frequency to determine presence of traffic jam on a road, se p.11, [0127]-[0128]).

7. Claims 58 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bahl et al 6,385,454 (hereinafter Bahl)** in view of **Rudrapatna et al 6,052,598 (hereinafter Rudrapatna)** as applied to claim 7 above, and further in view of **Toshimitsu et al 20060072501 (hereinafter Toshimitsu)**.

Regarding **claim 58**, as applied to claim 57, Bahl, as modified by Rudrapatna discloses the claimed limitations except where as the location in time and accuracy level is used to calculate traffic speed per each route section.

Toshimitsu however discloses using a location in time and accuracy level to calculate traffic speed per each route section (using handover frequency to determine presence of traffic jam on a road, se p.11, [0127]-[0128]). It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the combination of Bahl and Rudrapatna, by determining the frequency of handoff on a road as taught by Toshimitsu for the benefit of detecting the speed of a vehicle or traffic condition of the road.

Regarding **claim 59**, as applied to claim 57, Bahl, as modified by Rudrapatna discloses the claimed limitations except where as the location in time and accuracy level is used to detect traffic incidents. Toshimitsu however further discloses using a location in time and accuracy level to detect traffic conditions (using handover frequency to determine presence of traffic jam on a road, see p.11, [0127]-[0128]).

### ***Allowable Subject Matter***

8. Claims 42-46 and 65 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claim 63 is allowed.

### ***Response to Arguments***

10. Applicant's arguments with respect to claims 41-54, and 56-67 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLUMIDE T. AJIBADE AKONAI whose telephone number is (571)272-6496. The examiner can normally be reached on M-F, 8.30p-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Appiah can be reached on 571-272-7904. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

OA

/Charles N. Appiah/

Supervisory Patent Examiner, Art Unit 2617